LISTING OF CLAIMS

Please amend the claims as follows.

The listing of claims set forth below will replace all prior versions and listings of claims in the application.

1. (Withdrawn) An isolated fatty acid hydroperoxide lyase having activity for both 9-hydroperoxide substrates and 13-hydroperoxide substrates, wherein K_m and V_{max} of the lyase for 9-hydroperoxylinolenic acid are greater than K_m and V_{max} of the lyase for 9-hydroperoxylinoleic acid.

2. (Withdrawn) The lyase of claim 1, wherein the V_{max} of the lyase for 9-hydroperoxide substrates is greater than the V_{max} for 13-hydroperoxide substrates.

3. (Withdrawn) The lyase of claim 1, wherein the K_m of the lyase for 9-hydroperoxide substrates is greater than for 13-hydroperoxide substrates.

4. (Withdrawn) The lyase of claim 1, wherein the lyase has an amino acid sequence present in a protein isolated from *Cucumis melo*.

5. (Withdrawn) The lyase of claim 1, comprising the amino acids unique to *Cucumis melo* and set forth in Figure 1 which provide the activity of cleaving 9-hydroperoxide substrates with greater activity than 13-hydroperoxide substrates.

6. (Withdrawn) An isolated nucleic acid that encodes the lyase of claim 1.

7. (Withdrawn) The nucleic acid of claim 6, comprising the nucleic acid sequence set forth in SEQ ID NO:8.

8. (Withdrawn) An isolated protein, comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, and SEQ ID NO:7.

9. (Withdrawn) An isolated nucleic acid that encodes the protein of claim 8.

10. (Withdrawn) A vector, comprising the nucleic acid of claim 6.

11. (Withdrawn) The vector of claim 10, further comprising a promoter functionally linked to the nucleic acid.

12. (Withdrawn) The vector of claim 10, wherein the vector is a plasmid.

13. (Withdrawn) A cell containing an exogenous nucleic acid comprising the nucleic acid of claim 6.

14. (Withdrawn) The cell of claim 13, wherein the cell is a prokaryotic cell.

15. (Withdrawn) The cell of claim 14, wherein the prokaryotic cell is selected from the group consisting of an Escherichia coli cell, a Bacillus cell, and a Streptomyces cell.

16. (Withdrawn) The cell of claim 13, wherein the cell is a eukaryotic cell.

17. (Withdrawn) The cell of claim 16, wherein the eukaryotic cell is selected from the group consisting of a yeast cell, a plant cell, and an insect cell.

18. (Withdrawn) A method of cleaving a (9S, 10E, 12Z) 9-hydroperoxyoctadeca -10,12-dienoic acid or a (9S, 10E, 12Z,

15Z)9-hydroperoxyoctadeca-10,12,15-trienoic acid into a C_9-aldehyde and a C_9-oxononanoic acid and, comprising contacting the lyase of claim 1 with the (9S, 10E, 12Z) 9-hydroperoxyoctadeca-10,12-dienoic acid or the (9S, 10E, 12Z, 15Z) 9-hydroperoxyoctadeca-10,12,15-trienoic acid.

19. (Withdrawn) A method of cleaving a (9Z, 11E, 13S) 13-hydroperoxyoctadeca-9,11-dienoic acid or (9Z, 11E, 13S, 15Z) 13-hydroperoxyoctadeca-9, 11, 15-trienoic acid into a C_6- aldehyde and a C_{12}-oxocarboxylic acid, comprising contacting the lyase of claim 1 with the (9Z, 11E, 13S) 13-hydroperoxyoctadeca-9,11-dienoic acid or (9Z, 11E, 13S, 15Z) 13-hydroperoxyoctadeca-9, 11, 15-trienoic acid.

20. (Amended) A method of preparing 3-(Z)-nonenal, (3Z,6Z)-nonadienal, 2-(E)-nonenal, (2E,6Z)-nonadienal, or their corresponding alcohols from (9S, 10E, 12Z) 9-hydroperoxyoctadeca-10,12-dienoic acid or (9S, 10E, 12Z, 15Z)9-hydroperoxyoctadeca-10,12,15-trienoic acid, comprising

(a) contacting the (9S, 10E, 12Z) 9-hydroperoxyoctadeca-10,12-dienoic acid or (9S, 10E, 12Z, 15Z)9-hydroperoxyoctadeca-10,12,15-trienoic acid with ~~the protein of claim 1~~ an isolated fatty acid hydroperoxide lyase having activity for both 9-hydroperoxide substrates and 13-hydroperoxide substrates, wherein K_m and V_{max} of the lyase for 9-hydroperoxylinolenic acid are greater than K_m and V_{max} of the lyase for 9-hydroperoxylinoleic acid, thereby converting the (9S, 10E, 12Z) 9-hydroperoxyoctadeca-10,12-dienoic acid into 3-(Z)-nonenal or the (9S, 10E, 12Z, 15Z)9-hydroperoxyoctadeca-10,12,15-trienoic acid into (3Z,6Z)-nonadienal; and

(b) recovering the 3-(Z)-nonenal or (3Z,6Z)-nonadienal;

~~(c)~~ (b') reducing the 3-(Z)-nonenal into 3-(Z)-nonenol or the (3Z,6Z)-nonadienal into (3Z,6Z)-nonadienol and recovering the

3-(Z)-nonenol or (3Z,6Z)-nonadienol; or

~~(d)~~ (b") isomerizing the 3-(Z)-nonenal or (3Z,6Z)-nonadienal under temperature and pH conditions effective to obtain 2-(E)-nonenal or (2E,6Z)-nonadienal and either recovering the formed 2-(E)-nonenal or (2E,6Z)-nonadienal or reducing the 2-(E)-nonenal to 2-(E)-nonenol or the (2E,6Z)-nonadienal to (2E,6Z)-nonadienol and recovering the 2-(E)-nonenol or (2E,6Z)-nonadienol from the medium.

21. (Amended) A method of preparing n-hexanal, 3-(Z)-hexen-1-al, 2-(E)-hexen-1-al, or their corresponding alcohols from (9Z, 11E, 13S) 13-hydroperoxyoctadeca-9,11-dienoic acid or (9Z, 11E, 13S, 15Z) 13-hydroperoxyoctadeca-9, 11, 15-trienoic acid, comprising

(a) contacting the (9Z, 11E, 13S) 13-hydroperoxyoctadeca-9,11-dienoic acid or (9Z, 11E, 13S, 15Z) 13-hydroperoxyoctadeca-9, 11, 15-trienoic acid ~~with the lyase of claim 1~~ an isolated fatty acid hydroperoxide lyase having activity for both 9-hydroperoxide substrates and 13-hydroperoxide substrates, wherein K_m and V_{max} of the lyase for 9-hydroperoxylinolenic acid are greater than K_m and V_{max} of the lyase for 9-hydroperoxylinoleic acid, thereby converting the (9Z, 11E, 13S) 13-hydroperoxyoctadeca-9,11-dienoic acid into n-hexanal or the (9Z, 11E, 13S, 15Z) 13-hydroperoxyoctadeca-9, 11, 15-trienoic acid into 3-(Z)-hexen-1-al; and either

(b) recovering the n-hexanal or 3-(Z)-hexen-1-al;

~~(c)~~ (b') reducing the n-hexanal into n-hexanol or the 3-(Z)-hexen-1-al into 3-(Z)-hexen-1-ol and recovering the hexanol or 3-(Z)-hexen-1-ol; or

~~(d)~~ (b") isomerizing the 3-(Z)-hexen-1-al under temperature and pH conditions effective to obtain 2-(E)-hexen-1-al and either recovering the formed 2-(E)-hexen-1-al or reducing the

2-(E)-hexen-1-al to 2-(E)-hexen-1-ol and recovering the 2-(E)-hexen-1-ol from the medium.

22. (New) The method of claim 20, wherein the V_{max} of the lyase for 9-hydroperoxide substrates is greater than the V_{max} for 13-hydroperoxide substrates.

23. (New) The method of claim 20, wherein the K_m of the lyase for 9-hydroperoxide substrates is greater than for 13-hydroperoxide substrates.

24. (New) The method of claim 20, wherein the lyase has an amino acid sequence present in a protein isolated from *Cucumis melo*.

25. (New) The method of claim 20, wherein the lyase comprises the amino acids unique to *Cucumis melo* and set forth in Figure 1 which provide the activity of cleaving 9-hydroperoxide substrates with greater activity than 13-hydroperoxide substrates.

26. (New) The method of claim 20, wherein the lyase comprises an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, and SEQ ID NO:7.

27. (New) The method of claim 21, wherein the V_{max} of the lyase for 9-hydroperoxide substrates is greater than the V_{max} for 13-hydroperoxide substrates.

28. (New) The method of claim 21, wherein the K_m of the lyase for 9-hydroperoxide substrates is greater than for 13-hydroperoxide substrates.

29. (New) The method of claim 21, wherein the lyase has an amino acid

sequence present in a protein isolated from *Cucumis melo*.

30. (New) The method of claim 21, wherein the lyase comprises the amino acids unique to *Cucumis melo* and set forth in Figure 1 which provide the activity of cleaving 9-hydroperoxide substrates with greater activity than 13-hydroperoxide substrates.

31. (New) The method of claim 21, wherein the lyase comprises an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, and SEQ ID NO:7.